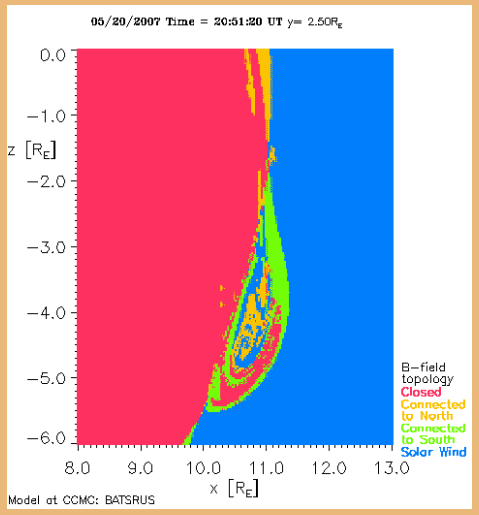
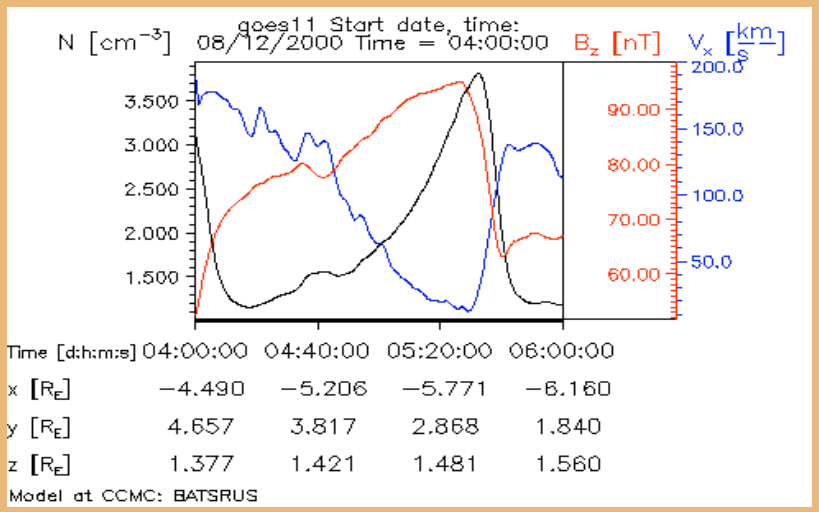
COMMUNITY COORDINATED MODELING CENTER

Progress: Run-on-Request Visualization



Magnetic topology

- Field lines started on adaptive grid in cut plane
- Available as single plot or in Movie-on-Request



Time-series generation:

- Track satellites through 3D magnetosphere
- Follow single position (or line in space) in time
- Over-sampling possible in time

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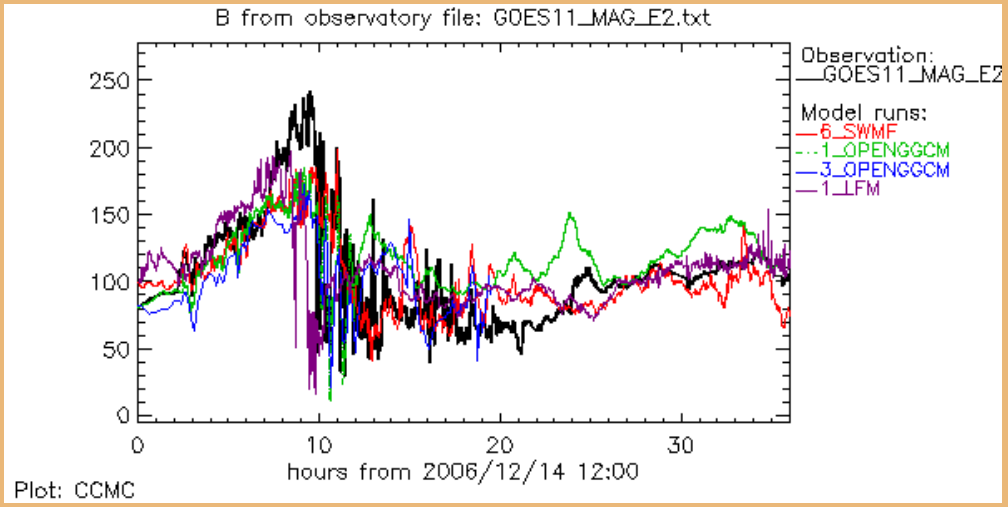
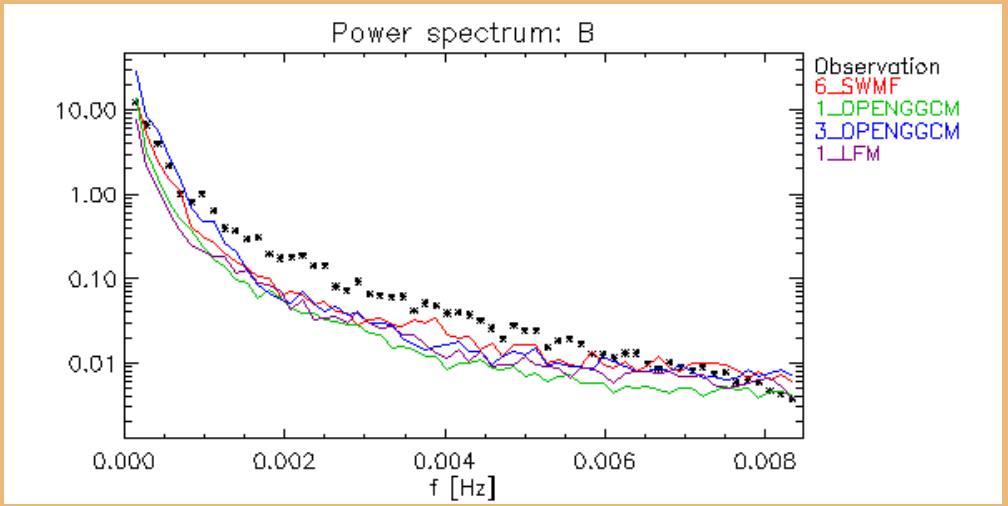
Progress: Metrics Study Visualization





Metrics study timeline tool

- Select color and line style for each model trace
- Computation of skill scores
- Set parameters for Fourier Transform
- Display power spectrum

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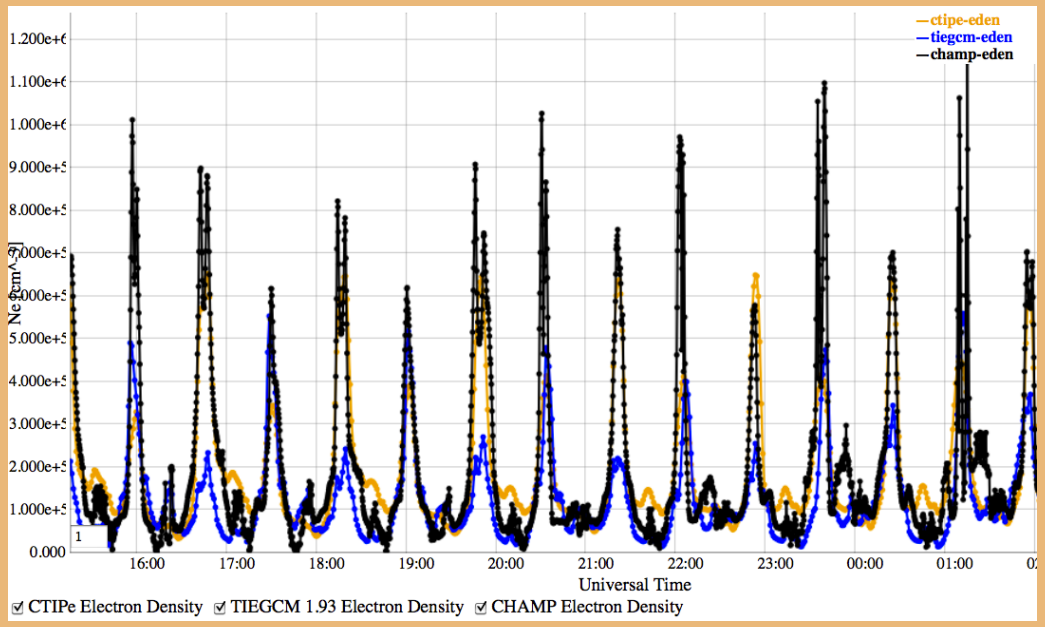
Progress: Timeline Tool for Climatology



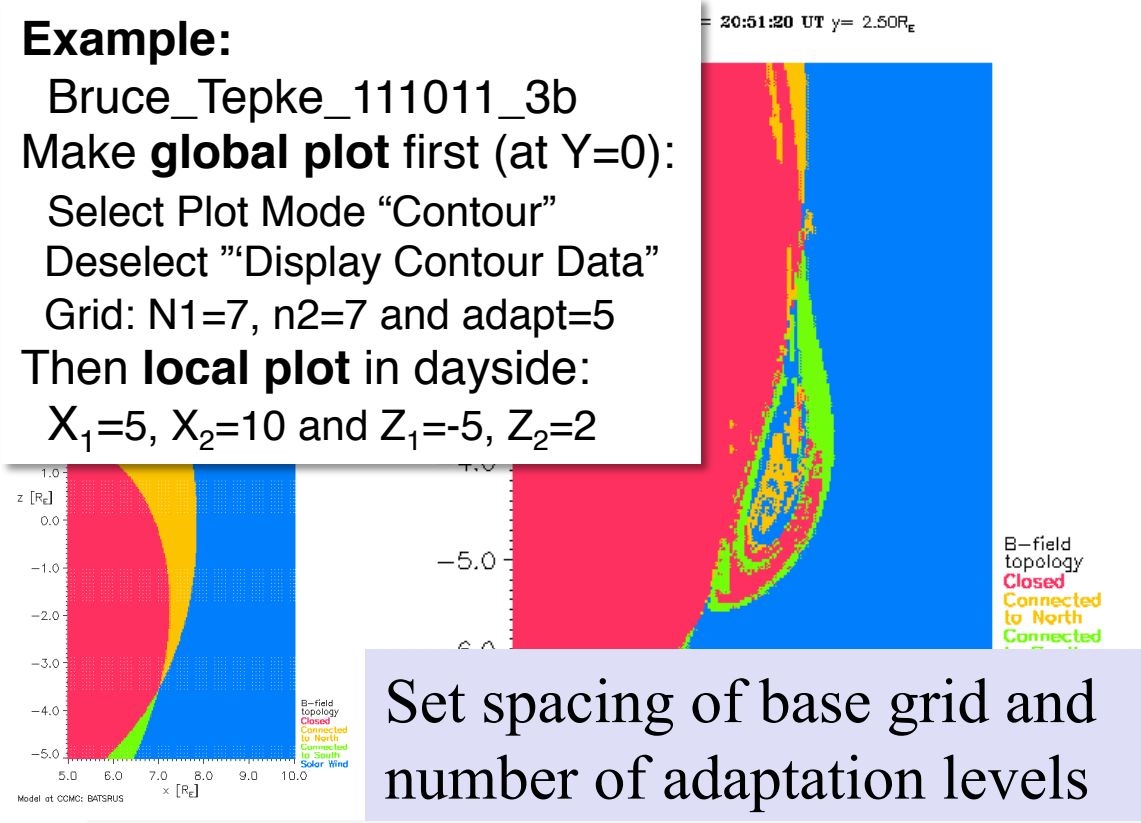
Timeline tool for long data sets

- Select traces for models
- Pan right and left
- Select custom time interval
- Apply rolling average

Progress: visualization

- Magnetic topology for all magnetosphere models
  Field lines started on adaptive grid in cut plane.
  Available as single plot or in Movie-on-Request

Example:
Bruce_Tepke_111011_3b
Make **global plot** first (at Y=0):
Select Plot Mode “Contour”
Deselect ”‘Display Contour Data”
Grid: N1=7, n2=7 and adapt=5
Then **local plot** in dayside:
X_1=5, X_2=10 and Z_1=-5, Z_2=2



Set spacing of base grid and number of adaptation levels

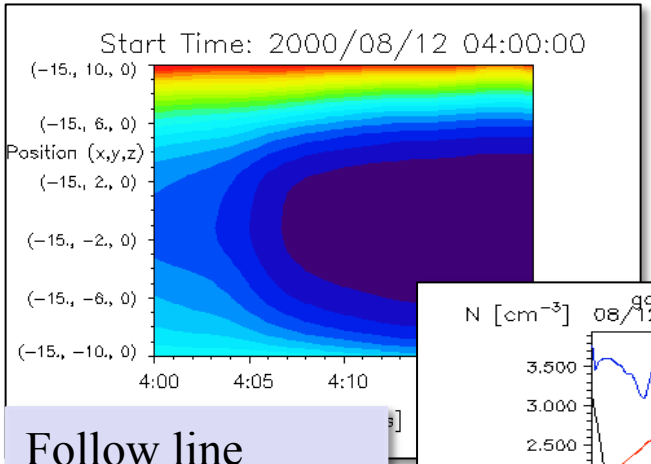
Plot Options:
Exclude region around the Earth up to 3
R_E
Image magnification 1
(all images; use >=1.25 for 3D Flowlines)
Line thickness 1 (flow lines, arrows)
Character thickness 1 (all annotations)
Allow variable plot image size
(all 2D plots: aspect ratio dx/dy between **0.3** and **4**)
Show simulation grid (disabled with 3D-Surface)
Show magnetopause (positions in 2D cuts passing within 12 R_E of Earth will be listed at the bottom)
Tolerance (between 0.01 and 1 R_E): 0.01
Show magnetic topology (use with "Contour", "Vector" or "Contour+Vector" plot modes:
Add color coding by magnetic connectivity: red: closed, blue, open, yellow: connected to north, green: connected to south)
Display Contour data with topology plot
Elements in base grid from which field lines emanate:
Base grid size
Horizontal N1: (between 5 and 11): 7
Vertical N2: (between 5 and 11): 7
Refine base grid by $2^{\text{Adaptation}}$, computation time for this will scale accordingly:
Adaptation: (between 2 and 6): 3

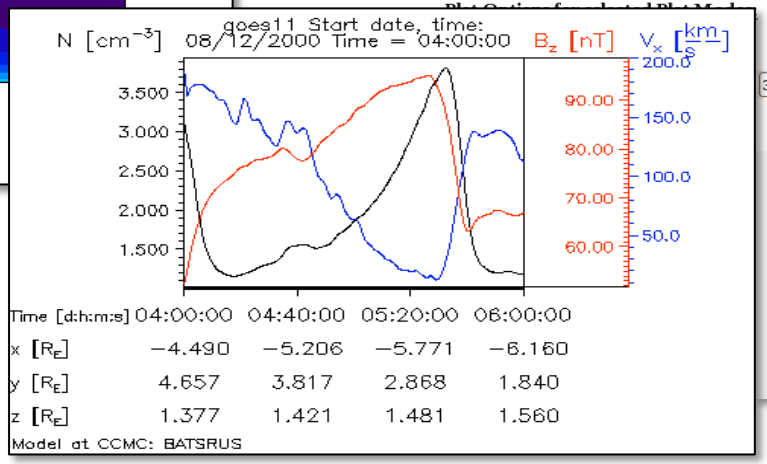
Movie file: file:///Users/Lutz/downloads/David_Sibeck_112707_1_movie_32233.gif

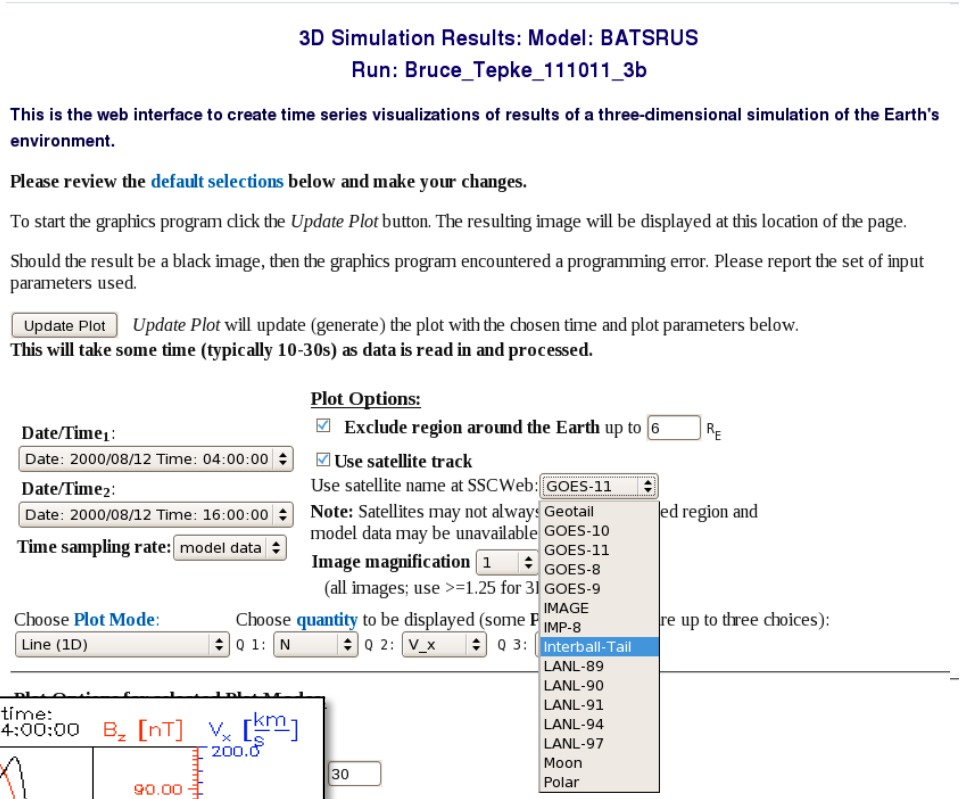
DEMO: visualization of time series

2) Track satellites or line through 3D magnetosphere

Example:
Bruce_Tepke_111011_3b







Follow line (-10,-10,0) to (-10,10,0) in time

"Use Satellite Track" option with list of applicable satellites

DEMO: visualization of time series

1) Metrics study tool:
GEM 2008 study,
B at GOES satellites

http://ccmc.gsfc.nasa.gov/cgi-bin/run_metrics_vis.cgi?study=GEM2008&event=2&metrics=1&obs=GOES11

Select quantity

Select color

Select line style

Have scores calculated

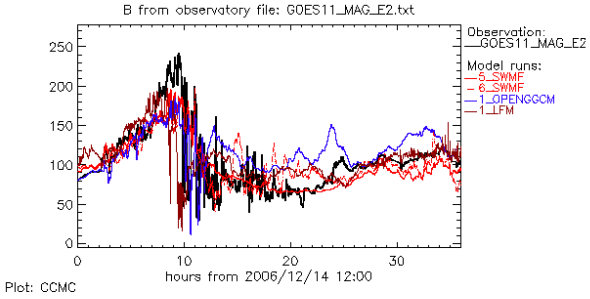
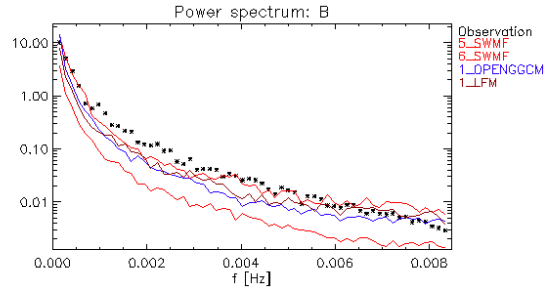


Figure: B from observatory GOES11 and model runs
Campaign: GEM2008
Metric study: Magnetic field at geosynchronous orbit
Event: December 14, 2006 12 00 UT - December 16, 00 00 UT

Variable: B Observation file: GOES11_MAG_E2.txt

Model_Setting	PredEff	N_region	N_finite	LogSpecDist	nWin	PredYield	Correlation
5_SWMF	0.703	2161	2161	0.901	69	0.659	0.858
6_SWMF	0.568	2161	2161	0.471	69	0.790	0.761
1_OPENGGCM	0.264	2161	2140	0.572	68	0.866	0.590
1_LFM	0.158	2161	2158	0.332	68	0.910	0.466

PredEff — Prediction Efficiency metric
N_region — the number of samples in the selected time window
N_finite — the number of points that were used for comparison (ie., those that were not NaN or infinite)
LogSpectDist — Log-Spectral Distance metric
nWin — the number of windows used for the spectral analysis (120-minute windows, offset by 30 minutes from the neighboring windows
PredYield — is the ratio of the range of modeled values (max minus min) compared to the observation (max minus min)



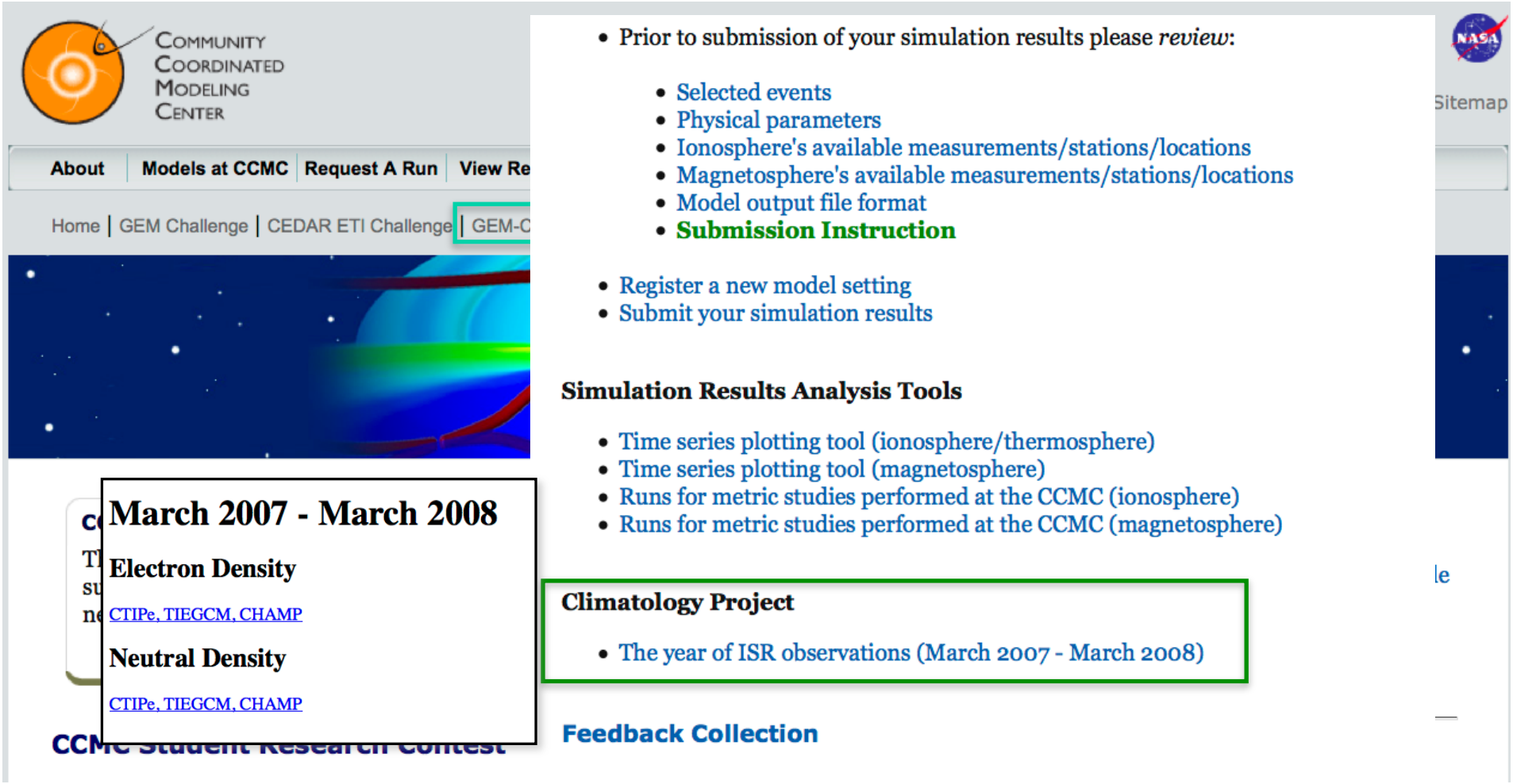
Publication Policy: Please contact the model owners before you use results for any presentation or publication (full Publication Policy).
To track usage for our government sponsors, we ask that you notify CCMC staff whenever you use CCMC results in a scientific publication or presentation. Thank you.
Go back to metrics challenge table

Update Plot *Update Plot* will update (generate) the plot with the chosen time and plot parameters below.
This will take some time (typically 10-30s) as data is read in and processed.

Start: Year: 2006 Month: 12 Day: 14 Hour: 12 Minute: 0 Second: 0
to End: Year: 2006 Month: 12 Day: 16 Hour: 0 Minute: 0 Second: 0

Progress: interactive timelines

GEM-CEDAR Challenge: Climatology



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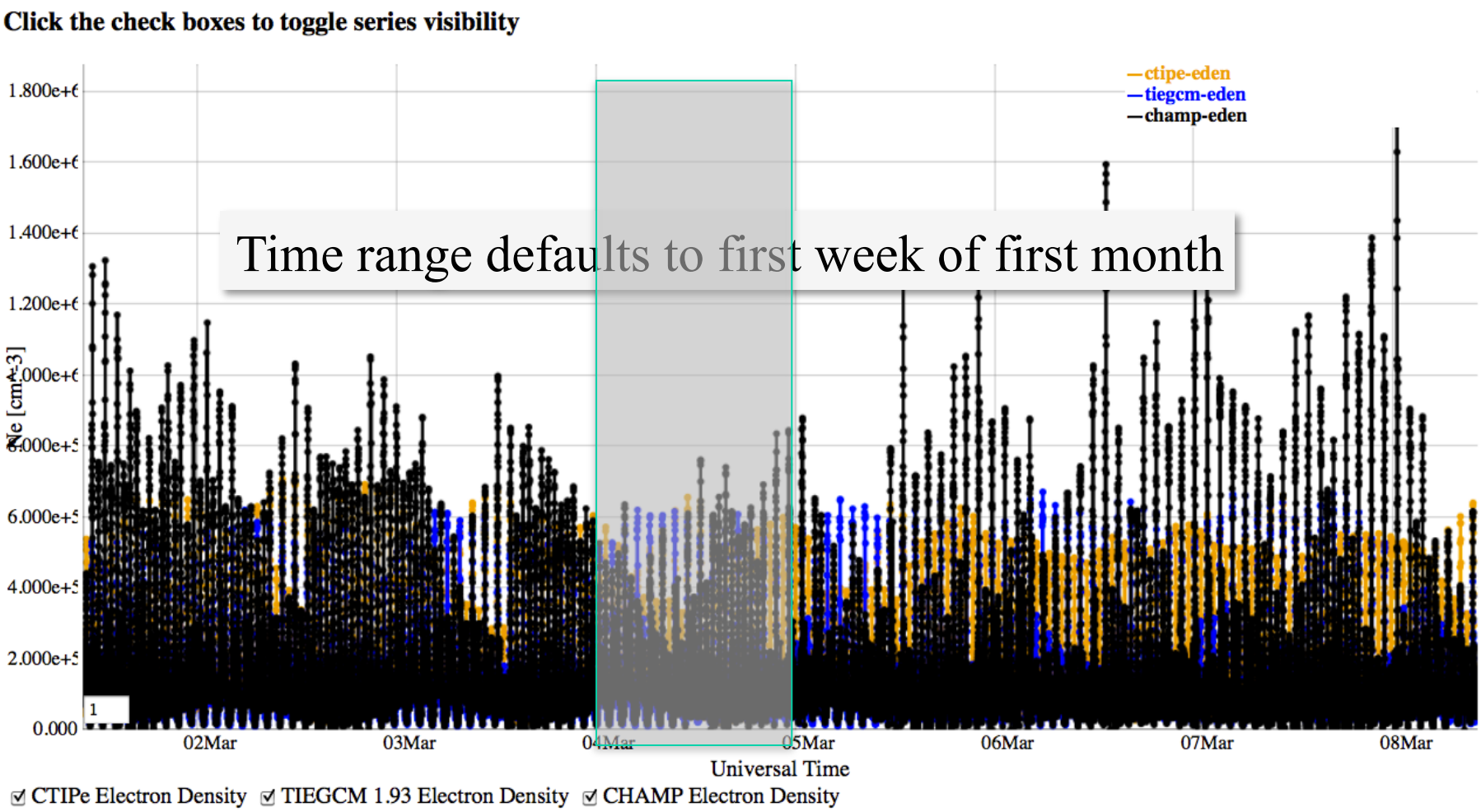
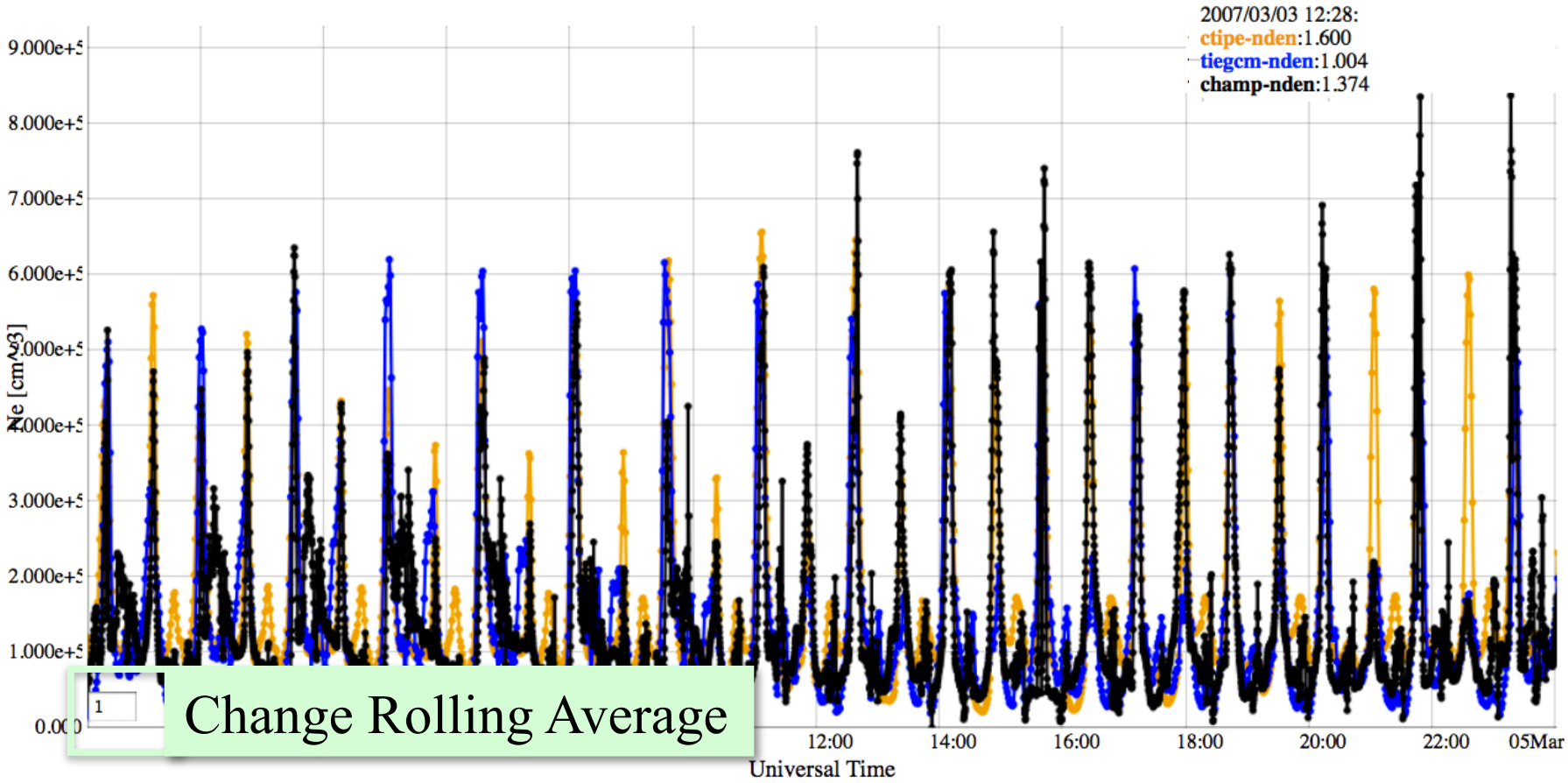
Progress: interactive timelines



Community Coordinated Modeling Center



☑ CTIPe Electron Density ☑ TIEGCM 1.93 Electron Density ☑ CHAMP Electron Density

Zoom: hour day week reset **Pan:** left right

2007 March April May June July August September October November December 2008 January February March